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ALMOST QUALITY: A CASE STUDY OF PROBLEM SOLVING
AT THE NATIONAL TRAINING CENTER

by

Lee R. Barnes, Jr.
Lieutenant Colonel (P), USA

A RESEARCH REPORT SUBMITTED TO THE FACULTY

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ABSTRACT

TITLE: Almost Quality: A Case Study in Problem Solving at the National Training Center.

AUTHOR: Lee R. Barnes, Jr., Lieutenant Colonel (P), USA

Problem solving in the United States Army is generally accomplished using the Military Decision-Making Process as outlined in FM 101-5, *Staff Organization and Operations*. In the past, management practices have been separated from military leadership practices, further reinforcing the use of this traditional approach to problem solving. Total Quality Management, just now being implemented into the U.S. Army as Total Army Quality (TAQ) should change this paradigm. This case study examines how one of the training teams at the Army's National Training Center attempted to institute a process improvement into a tactical procedure. The case study looks at what was done (following the traditional style); how TAQ is being implemented into the Army; and how, even following the traditional process, the training team still incorporated many of the techniques and procedures of TAQ. The report argues that there are valid uses for both TAQ and the traditional Military Decision-Making Process in Army problem solving.

BIOGRAPHICAL SKETCH

LTC(P) Lee Roy Barnes, Jr., USA, (BS, United States Military Academy; MMAS, Command and General Staff College) is a student of the Air War College, Class of '94. Assigned to be the G3, 1st Infantry Division (Mechanized), LTC Barnes' most recent assignment was as the Senior Brigade Staff Combat Trainer at the National Training Center (NTC), Fort Irwin, Ca. Immediately prior to that assignment, he commanded the 1st Battalion, 63d Armor, part of the full-time Opposing Forces (OPFOR) at the NTC. He is a graduate of the Armor Officer Basic Course, the Infantry Officer Advanced Course, and the Command and General Staff College. His previous assignments included tank platoon leader (Korea); company executive officer, battalion staff officer (Ft. Carson, Co.); company commander, armored cavalry troop commander (Germany); Army National Guard Advisor, Armor Branch Assistance Team Chief (Billings, Mt.); battalion executive officer, brigade operations officer, brigade executive officer, and doctrine writer and instructor at the Infantry Center and School (Ft. Benning, Ga.).

"It is not good to have zeal without knowledge, nor to be hasty and miss the way." (Proverbs 19:2)

I. Introduction.

This paper is a case study of how the brigade training team at the Army's National Training Center--the "Broncos"--solved a problem. During the year-long process (July 92 - June 93), the Bronco leadership used many problem solving techniques with varied success, all under the umbrella of the time-tested Military Decision-Making Process. The thesis of this paper is that a deliberate application of Total Quality Management (TQM) techniques to clearly identify and solve the problem would have saved time and effort and would have added significantly to the overall utility of the final product. The case study draws the conclusion that, in some instances, TQM processes can provide more appropriate decision-making tools for combat leaders and trainers to use than traditional military processes.

The first part of this paper describes the problem, the situation and the processes that were used to solve the problem. The second part of the paper is a brief examination of the Army's overall approach to implementing Total Army Quality (TAQ) throughout the service. The paper ends with an analysis of how TQM, or in this specific case, TAQ, could have had a positive effect on the process and the outcome.

II. Background and Situation.

Twelve times each year, combat brigades and their subordinate units deploy ("rotate") from continental US bases to the National Training Center (NTC), at Ft. Irwin, Ca. There, they participate in realistic combat training against a full-time Soviet-style Motorized Rifle Regiment Opposing Force (OPFOR). This mock warfare occurs under the watchful eyes of the Commanding General, NTC, and Operations Group (OPS GRP) personnel, the resident trainers. OPS GRP structure generally mirrors that of the rotational brigade. Its permanently established teams train the brigade's subordinate combat, combat support and combat service support battalions

to June 1992, I commanded the OPFOR tank battalion and I commanded the OPFOR regiment on every-other rotation (trading Commander and Deputy Commander positions with the OPFOR Infantry battalion commander). As Regimental Commander and Deputy Commander, I frequently participated in the After Action Reviews (AARs) conducted by each training team after each mission and at the end of each training rotation. In June 1992, I was assigned as Senior Trainer on the Bronco team.

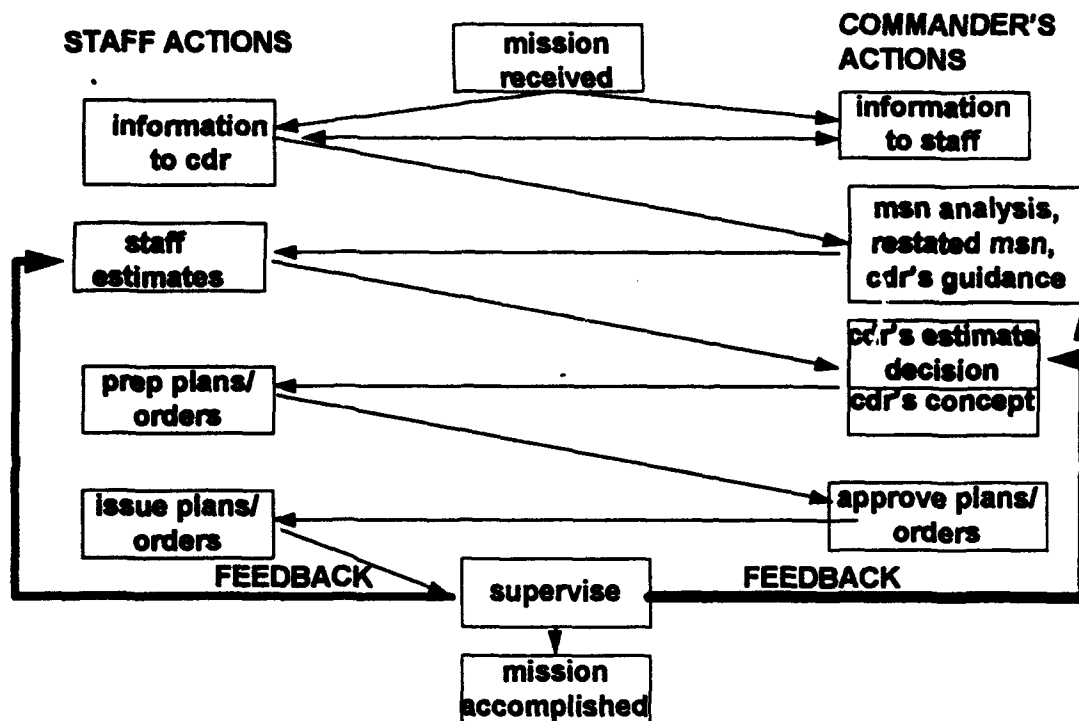
III. Charting the Course.

As part of my inbriefing to the Bronco team, the NTC Commanding General, MG William G. Carter, directed me to continue to focus the Bronco team efforts towards immediate tactical improvements for the training brigades' command and staff elements, as had been the case up to that time, and to increase our efforts to improve the Army's brigade operations doctrine.² Doctrinally, we were to focus on brigade staff support to the brigade commander when he was required to make routine and hasty tactical decisions. Routinely, rotational brigade staffs assisted their commanders to make sound tactical decisions given adequate time, but the quality of staff support and the subsequent decisions was inconsistent in a time-sensitive environment.

Part of my initial briefing to the Bronco team included what I called my "vision" for the team. In part, I said we would continue to share our knowledge with the training units and with the schoolhouses, and that as the brigade experts we would publish in professional magazines our thoughts on how to improve brigade doctrine and operations. I also addressed our tasking to take "head-on" the challenge of fixing the problem of brigade

² I had earlier co-authored an article that addressed some doctrinal contradictions in the area of Decision Support Templates (DST). (DSTs are used in the Army process of Intelligence Preparation of the Battlefield, part of the staff preparation for the Command Estimate. See FM 34-130, Intelligence Preparation of the Battlefield, or Command and General Staff College text ST 100-9, Techniques and Procedures for Tactical Decisionmaking, for detailed discussion of the IPB-DST process.) MG Carter had reviewed my draft of this article, and he directed me to continue my efforts to resolve the doctrinal problems I had identified. (Personal notes, 5 October - 29 November 1992).

tactical decision-making during operations. I issued instructions that we would not "invent ways to do business when doctrine provided us with one;" we would follow the military decision-making process as outlined in FM 101-5, Staff Organization and Operations in accomplishing our missions.³ (14: Chapter 5)



MILITARY DECISION-MAKING PROCESS

IV. The Heart of the Matter.

The Army command and control process, "... is how the commander and staff accomplish the mission. It is the procedures and techniques used to find out what is going on, to decide what action to take, to issue instructions, and to supervise execution..." (14:1-2) The Estimate of the Situation (integral to the military decision-making process) provides the framework for analysis and decision:

³The ten step Military Decision-Making Process sequence of actions is not fixed, but generally is expected to follow the sequence described and as shown in the diagram (from page 5-6, FM 101-5).

The purpose of the estimate of the situation is to collect and analyze relevant information for developing, within the time limits and available information, the most effective solution to a problem. The estimate is applicable to any situation and to any level or type of command. Although normally used in solving tactical problems, it is applicable to other military activities....[my emphasis] The commander's estimate results in a decision on how to accomplish a given mission. After considering the mission, enemy, terrain, troops available, time, and other relevant factors, a decision is reached. The estimate is based on personal knowledge of the situation, on ethical considerations, and on staff estimates. (14:5-2)

I had used both the command and staff estimate process and the military decision making process to make decisions throughout my career. I felt it was especially correct to use them to accomplish the mission assigned by the Commanding General, because at the "heart of the matter" were the inabilities of the rotational brigades to both consistently apply these processes to attain consistent results.

COMMANDER'S ESTIMATE OF THE SITUATION

1. MISSION.
2. THE SITUATION AND COURSES OF ACTION.
 - a. Considerations Affecting the Possible Courses of Action....
 - b. Enemy Capabilities....
 - c. Own Courses of Action....
3. ANALYSIS OF COURSES OF ACTION....The commander accomplishes this by war gaming the course(s) of action....
4. COMPARISON OF COURSES OF ACTION.
5. DECISION.

(Modified from Format for
Commander's Estimate of the
Situation (14:E-8))

V. Initial Solutions.

The Commanding General had clearly identified the problem: Brigade commanders didn't consistently make wise tactical decisions during operations, generally because their staffs weren't adept at using their primary analysis tools--Intelligence Preparation of the Battlefield (IPB), and Decision Support Templates (DST)--when preparing their recommendations for the commanders. Our mission was to develop a long-term (doctrinal) solution to this problem. Inherent tasks included finding or developing a workable technique or procedure; codifying this technique or procedure; getting it into the hands of the appropriate doctrine writers; and, in the near term, passing the solution on to training brigade staffs in such a manner that they would be able to employ it, in addition to their other procedures, during their rotation.

After much debate, I decided that we would pass the technique on to the training brigades through the medium of a short humorous demonstration--a skit--that we would present to each training brigade staff immediately prior to the tactical phase of the rotation. The 13 "principal" Bronco trainers would each act out the role of his or her staff counterparts. The skit setting would include a situation similar to that which they would find in combat (and in the upcoming rotation) which would require the brigade staff to make a relatively quick tactical recommendation for the commander's decision. The goal of this skit would be to demonstrate an effective method of integrating the IPB, DST, and commander and staff estimate of the situation processes during combat.

I set a target date for the first rehearsal one month away (early September 1992) and issued planning guidance. Each of the SMEs were to bring their staff products, including their estimates and supporting data to this rehearsal. The preparation for the skit would replace our scheduled professional training for the next month (about six scheduled hours), so there would be no need for "overtime."⁴

⁴The amount of time devoted to any particular project was a critical concern. In June 1992, each of the team members was getting about 8 days off a month, and was spending about 10 days of each month in the field. Additionally, each person was spending about 1 out of every three working days

When we met for the first rehearsal; each of the contributing SME "staffs" brought their well prepared, doctrinally correct documents. The briefer was prepared with his lead-in monologue; the "set" was complete with maps, charts and overlays. Everything was right, but little of it fit together. Each SME was pushing his own (valid) agenda at the expense of the overall purpose--the sum of all our efforts did not yield a solution to the problem. We had to try again; another month would go by before we could all get together and rework the skit.

VI. Regrouping.

My next move was to convene the senior staff members. Myself, the Executive Officer Trainer (XO), and the Senior Engineer Trainer were lieutenant colonels. The Operations Staff Trainer, Intelligence Staff Trainer, Fire Support Trainer, and Air Defense Trainer were senior majors. Between us, we'd been assigned all over the world, fought in combat, worked on low-mid- and high-level staffs, commanded up through battalion level, and we were all successful leaders. We knew we had the skill and experience to solve this problem; we agreed that we just needed to refine our approach. We agreed to reconvene after the upcoming rotation (about 18 days later) to brainstorm our ideas.

My two year experience as OPFOR Regimental Commander had allowed me to repeatedly practice command and control of brigade-sized units under near-combat conditions. It proved an excellent opportunity to gain brigade-level tactical experience. I was finding out that the Broncos had tactical and doctrinal knowledge that was as good as mine, and better in their particular areas of expertise. Many had seen the same mistakes made repeatedly by brigade after brigade. They had also seen brigades NOT make these same mistakes, and, more importantly, they knew many of the reasons

pulling a 24 hour shift--there wasn't any time to find, so something had to be deleted from the schedule. The significant changes to the schedule caused me to brief the Commander, Operations Group (COG) on the Bronco Skit while it was still in the concept stage, which in turn, forced me to commit to what turned out to be a flawed concept. Later, I had to change the concept substantially and I was professionally embarrassed even though the changes yielded a much better product and were willingly accepted by my superiors.

why brigade staffs succeeded or failed. There were some very skilled people on the Bronco team who had done all that was expected of them in the past. Most had valid observations and recommendations about this specific process that they wanted to bring to the brainstorming session. Most of them were excited about what we were doing--as a team, we were closing in on the answer to a tough problem. Even though I intended to reconvene only the senior staff, this was an opportunity too good to pass up. I changed my directive to expand the brainstorming session to include the bulk of both field training teams (increasing the size of the brainstorming group from 7 to almost 20 Broncos).

VII. Brainstorming.

Acting as recorder and facilitator, I both led and then recorded the results of the brainstorming session. The noncommissioned officers and junior officers contributed at least as much as the more senior officers. As we began, collectively, to look at the problem, the real issue was becoming apparent: **Our doctrine did not discuss the critical steps a brigade staff should take during operations--brigades were failing, partly because they had no road map to follow.** Each SME had already begun a search for doctrinal shortfalls: The problem was really starting to come into focus.⁵

We had already identified the best work in this area as being that written in the Command and General Staff College Special Text 100-9, *Techniques and Procedures for Tactical Decisionmaking*, and we had talked with the author to inform him as to what we were doing. The senior staff team reduced the comments from the brainstorming session to functional groups (affinity diagram), then molded these groups into the general format

⁵After we had worked out the various problems and agreed what was wrong, right, or simply "slanted" I challenged my team members to write articles for their respective journals. On his own volition, the Brigade Intelligence Staff Trainer put together a series of several short articles written by Broncos (and a couple written by other NTC training team members) and arranged to get them published in an NTC-focused issue of the Intelligence Journal (May-June 1993). All told, in a period of about 6 months, about 14 professional articles were written and published in professional magazines and newsletters by members of the Bronco Team.

used in the Special Text. The resulting Staff Actions Chart was to form the core of the instructional portion of the Bronco skit. (The chart is reproduced at Appendix A).

The brainstorming session also uncovered an administrative roadblock to our efforts to solve the problem at hand: A separate briefing on Safety and Rules of Engagement (ROE), sacrosanct on the schedule, directly interfered with our planned skit. The ROE briefing was needed, but the existing briefing was poorly put together. Basically a listing of "Don'ts and No's," it usually set the stage for a confrontational relationship between the Broncos and the rotational brigade headquarters. The briefing needed to be given before the skit, but it took most of the available time. Under these circumstances, the skit was dead before arrival! Out of necessity, I tasked my XO to rework the ROE briefing and assigned him a small cross-functional team that had access to computers and other equipment.

We gave ("performed") the skit for the first time on 27 October 1992: It was only marginally successful. It dragged on too long; the "Bronco Players" weren't very humorous; and my summation was clumsy.⁶ The length of the skit was fixable, so was the "delivery" by the Players. But the summary, based on our Staff Actions Chart, couldn't be fixed--the format was wrong. We realized that we were trying to describe an interrelated set of actions as if they were sequential. The rotational staff's comments helped to highlight the problem: They generally understood the sequence and actions, but they rejected the lock-step approach indicated on the chart.

Immediately after the skit, the senior staff team met to "hotwash" it. Someone recommended reworking the troublesome chart into a flowchart: This was seen as a workable solution, and we began work on it immediately. (A copy of the first of five pages of the flowchart is at Appendix B.) In the coming months, we refined the flowchart and its usefulness expanded rapidly. We used it repeatedly--not only to assist in the skit (which quickly earned a demotion to a simple "demonstration"), but also as a training aid during after action reviews, during teleconferences with the Armor, Infantry,

⁶The feedback I got from both the Bronco team and from the rotational brigade staff was that it was still a worthwhile exercise. Several members of my staff made written After Action comments that helped us fix the problem areas. The excellent questions asked by the rotational staff served to validate the general concept, if not the execution.

and Aviation Schools, to assist in presenting the same ideas to the other training teams, and in other training efforts on post.⁷

Meanwhile, the XO's cross-functional work team had created a correct, but unexciting ROE briefing. We decided to improve this briefing by recording it on videotape, using vivid and relevant footage for emphasis. The resulting product was excellent. This new (to the Broncos) concept of videotaping our training then crossed working team lines and moved into the ongoing demonstration refinement process. The Bronco demonstration, now titled "Planning for Synchronization," was scheduled to be recorded in June. From February to June, the team refined and rehearsed the demonstration, while continuing to use it for instruction for each training brigade staff. The revised staff actions flowchart was featured in the videotape, and was used as the outline for the taped presentation itself. Twenty-five copies of the one-hour final version of the videotape, "Planning for Synchronization," were distributed to the leadership of NTC, to selected Brigade Commanders, and to the Combined Arms Center at Ft. Leavenworth.

We had finally gotten to the root of the problem and developed a workable solution (the brigades still had to train themselves to use the product). It had taken us a year of following the traditional accepted military procedure to get our answer. But the process we used was inefficient, and much of our work has been lost to inertia ("Objects [ideas] at rest tend to remain at rest..."). The films created by the Bronco team were used for some months after their creation, but are rarely used now. Also, the potential to have the desired impact on Army doctrine is sharply reduced. Our failure to define and measure our progress led to trouble "selling" the recommended changes to the Army doctrine writers. They didn't fully accept the procedures we refined and developed; the lack of data limited the Bronco team's ability to present or defend our work. The discussions with the doctrine writers often reverted to one person arguing their opinion with another--and the

⁷The FORSCOM Leader Training Program (FLTP) is given to 2 to 4 visiting Active and Reserve Component brigade staffs each rotation. Starting in February 1993, a shortened form of the demonstration (given as a class, using primarily the flowchart as a training aid) was added to their training agenda.

doctrine writer controlled the pen.⁸ Without the long term solution we sought from the beginning, the year's worth of work is simply evaporating. Someone else will probably have to work this process improvement again, hopefully, this time, using TQM techniques.

VIII. Total Army Quality (TAQ).

In August 1988 the Secretary of Defense issued a DOD Posture Statement, formalizing the department's commitment to Total Quality Management.(22:24) In February of 1992, the Army moved to institutionalize TQM at an executive-level meeting. The resulting *Leadership for Total Army Quality Concept Plan*, "...addresses the implementation of Total Army Quality, the Army's approach for Total Quality Management." (15: Executive Summary)

The Chief of Staff of the Army has started the Army down its road to quality with a statement of his Vision: "America's Army is a partner in freedom which the Nation can count on...A total force trained and ready to fight...Serving our Nation at home and abroad...A strategic force capable of decisive victory." (15:20) The Army's movement to adopt TAQ is a deliberate, but flexible approach: "Adopting the philosophy and practices of Total Army Quality is not optional. However many organizations are unique or differ in a number of significant ways. Therefore, each organization's leadership must tailor their own TAQ strategy and implementation plan to best fit their own circumstances." (15:1,2) Also, "...a substantial amount of variation in the rate at which implementation progresses is anticipated. Each organization will progress at its own pace...monitored by the next higher organizational level." (15:11)

⁸Based on a 4 November 1993 telephone interview with the current Bronco 07, LTC John Rosenberger, The Combined Arms Center (CAC) at Ft Leavenworth only accepts parts of the solution recommended by the training tape. The Bronco's overall recommendation is to formalize the "hasty" procedure by adopting a reduced version of the Deliberate Wargaming Process, described in ST 100-9. CAC supports a much less structured procedure at the brigade level. Good metrics would have provided support for one or the other positions. A 7 March 1994 telephonic interview with COL(P) James P. O'Neal, the current COG, confirms the disuse of the training tapes.

The law of inertia guarantees resistance to change, in this case, resistance to implementing TAQ. In the past, some well-intentioned leaders resisted similar changes. Then, they attempted to separate proven management methods from leadership procedures, aligning the former with office and factory skills, and the latter with warrior skills. The Army doctrine for senior leaders, FM 22-103, Leadership and Command at Senior Levels, recognized and addressed this problem:

Often we do not devote sufficient attention to the challenges of being both leaders and managers in a warrior profession....[Senior leaders] must resolve the conflict of leadership and management by balancing their use appropriately. We need management skills for efficiency. We need warrior skills to win....Although separate processes, management and leadership are almost never employed separately. (12:43,44)

The Army's has begun its four step method for implementing TAQ-- Awareness, Assessment, Team Building and Action--at all levels of the Army, including executive training sessions and institutionalizing TAQ instruction in the Army's professional development schools. (15:3) TAQ is being integrated into the management structure of Army major commands (MACOMs), and is being taught in Army schools (16:78) TAQ appears to be fashioned more after Dr. Juran's approach to quality--improving project by project--than to Dr. Deming's "14 Points".(19:7) One step the Army appears to be taking at the highest levels to aid in the adoption of TAQ is to integrate TAQ concepts, while changing process and group names only when necessary. "What these groups are called is not important, but the role they perform is. Using existing structures to perform those roles is encouraged, since it strengthens the chain of command and minimizes bureaucracy."(15:5) The responsibilities for implementing TAQ throughout the Army are generally grouped into three parts: Executive Steering Committees/Councils/Groups; Quality Management Boards; and Process Action Teams (PATs).

The Army style of implementing TAQ (that is, unit by unit) is recognized by Carr and Littman as a practical pattern within governmental units. Though seen as more palatable to some managers in larger units,

"[t]he downside of unit-by-unit development is that it leads to inconsistencies within a larger department, and within the government itself. Some units may practice TQM while others do not. If those that do lack a common 'quality language' and style, this lack limits cross-functional and interagency teamwork." (6:272) The Army's unit-by-unit implementation of TAQ may well give rise to frustration, especially given the Army's valid requirements for interoperability within units. The cost is too great to allow a lack of a common "quality language" to hinder smooth interoperability on or off the battlefield.

IX. What Could Have Been.

TQM, and TAQ by association, offers several differing approaches to quality: Deming's Fourteen Points, Seven Deadly Diseases, and other Obstacles to Quality; Juran's Ten steps to Quality Improvement, etc. My intent was not to show how the Bronco team complied with any of these teachings--we didn't and we didn't even know we didn't. I was "in charge", and I applied what I had learned in Leadership 101 and in the School of Hard Knocks and followed traditional military leadership and decision making doctrine.

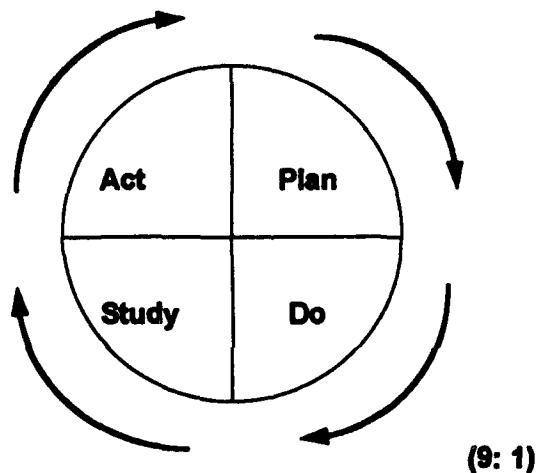
I knew that the Bronco Team, even as good as it was, could improve its efficiency and effectiveness. I knew that it was important to keep the morale high, especially as we began to focus on internal team problems. I knew that new ideas would be more enthusiastically accepted if I could get the individual members to develop a pride in ownership for them. I knew it was key to keep focused on the mission--we had to improve brigade staff decision making processes--regardless of the changes we made to the Bronco Team procedures. As a participant in all of OPS GRP's teams' AARs, I saw what parts of which team's AARs worked the best--As team chief I imitated these processes--benchmarking was a way of life (even though we thought we were copying). The COG stressed benchmarking under the heading of "uniformity". He produced copies of those training team charts and briefing slides that he thought "set the standard" and strongly encouraging all teams to use these charts or ones similar to them in our briefings and AARs. However, had these same actions been rolled into a deliberate process

improvement plan, under a designated and trained PAT the application may have had a more immediate and significant impact on the overall outcome.

The "flexibility" granted in the Army's implementation of TAQ was at work here: TAQ had not yet been introduced into the structure of the National Training Center and the leadership directly involved in this problem had no formal training in TQM techniques. Regardless, the problem the Broncos wrestled with was tailor-made for TQM process improvement techniques.

Process improvement, based on the Shewart Plan-Do-Study-Act (PDSA) cycle, focuses primarily on the process not the product. (9:1) The mission from the Commanding General was clearly to improve an existing process, so this cycle could easily have been the blueprint for our change. The cycle, illustrated below, is repeated based on the iterative results of implemented improvements.

The Shewart Cycle (Ishikawa Circle)



PLAN: Based on what we know, what do we want to do next? How are we going to do it? To achieve what result?

DO: Implement the plan. Keep it simple, initially, and allow for some missteps.

STUDY: (Often referred to as the "CHECK" instead of "STUDY" step.) Measure the results, monitor the progress. It is here that data first becomes important, and that Metrics are determined to be correct and adequate or are adjusted.

ACT: Standardize the process change if it worked; if not, run a new change through the system. Part of this step is the documentation of the implemented change.(9:1)(24:5-31)

Looking at the brigade staff decision-making problem with this cycle as a guide, the process the Bronco Team took could generally be described in TQM terms as follows:

PLAN: General Carter clearly saw the Bronco Team as the Process Owner for brigade staff operations at the NTC; and he initiated the Process Improvement Cycle. He issued a clear Mission statement and set the Goal. He issued implementing instructions, and Empowered me with the necessary authority and responsibility.

I used the entire Bronco Team as a Process Action Team (PAT).⁹ I used the team SME's as a Quality Management Board. The External Customers were identified as the training brigade staffs and the integrating centers; Internal Customers were the OPS GRP training teams and individual trainers; OPS GRP headquarters would act as the Supplier.

The Planned Change was initially to implement a slightly modified process described in a doctrinal pamphlet (Benchmark). From a Brainstorming session and the subsequent Affinity Diagram, the Team took a false step that led to development of an oversimplified Flowchart. The

⁹ "Typical responsibilities for a Process Action Team include:

- (a) Perform approved improvement project[s].
- (b) Determine how the process is currently performed and measure the existing process capability.
- (c) Apply a disciplined problem solving methodology (PLAN - DO - CHECK - ACT) to improve process performance and attain or exceed the objectives of the improvement project.
- (d) Present recommended improvement actions, which are beyond the scope of the team's authority to implement, to the appropriate [higher headquarters]. " (15: 6,7)

method of implementing the change, the Bronco Skit, was also determined during this step.

DO: We introduced Just In Time Training for the Team as a whole so we could merge our conflicting agendas, as we rehearsed and prepared for the Bronco Skit. As we attempted to Implement the Planned Change, we ran into conflicts in priorities and resources (the ROE briefing). Our first attempt at implementing the change was resisted by the Customer (the brigade staff was not receptive to what it rightly perceived to be a half-right solution). They provided us immediate Customer Feedback (see next step) and continued Feedback as they attempted to implement the changed procedure in their rotational training.

STUDY/CHECK: Our lack of Metrics caused us to rely on subjective evaluations as to the effectiveness of the change. The brigade staff's Feedback was used as the start point for reevaluating the effectiveness of the change; the brigade staff's performance was subjectively evaluated to further determine the effectiveness of the change. Metrics could and should have been developed to better track the effectiveness of the change.¹⁰ The Bronco Team's routine post-rotation review was a forum for discussing training effectiveness (as well as an administrative debriefing of key team members)

¹⁰For example, "Effective Staff Input" could have been determined by a quick poll of each SME after each decision briefing. Pareto charts showing the adjudged effectiveness by staff section or by the staff as a whole could then be fabricated. The foundation for the SME judgment could easily be the criteria established in the Army's Mission Training Plans (AMTPs), or, if necessary, the SME could develop his own criteria (which in turn could lead to additional training input in the form of professional magazine articles and possible doctrinal refinements). This staff input effectiveness could then be compared with the results of the mission to determine if there is any direct correlation to brigade performance, etc. At the end of the training rotation, a cumulative chart could be constructed which could then be used as a means of measuring overall effectiveness when compared to similar cumulative charts of other brigades. Currently, word descriptions are used to tell the effectiveness of training; only a few charts are used to show effectiveness and then only in areas that are easily measurable.

and during this debriefing the results of the implemented change were thoroughly discussed. SMEs produced written comments on the overall training results--I also reviewed these comments for additional insights into the effectiveness of the change, and for clues to additional changes needed.

ACT: Based on the results of the proceeding step, several changes to the Process were implemented. These changes were recorded by revamping the simplistic staff actions Flowchart to a more accurate representation of staff actions and interactions. The Bronco Skit was demoted to a simpler demonstration, and was restricted in its scope. The work of a Crossfunctional Team on another project brought the concept of filming our training (the demonstration) to this problem area. The team schedule was adjusted to allow earlier interaction with the training brigade, etc., and the PDSA cycle was restarted.

The Bronco Team problem solving example could be similarly "reversed engineered" through other process improvement methodologies, such as AT&T's Basic Performance Improvement Cycle (7:16) or Boeing's Nine Step Problem-Solving Process (4:29), etc. This would only serve to reinforce the point: Many of the Team's actions would have been similar, even if named differently, had the Team been following a quality improvement process instead of the traditional military decision making process. However, the significant differences would have been: (1) TAQ processes would have required, from the outset, a more deliberate look at the process than the results; (2) Interaction with the customers would have driven the PAT to work smarter with fewer possible missteps (early cooperative development of useful metrics, earlier development of the staff actions flowchart, quicker identification of documentation desired for proposed doctrinal changes, etc.); and (3) Metrics would be developed and tracked, not only to facilitate tracking the effectiveness of the change, but to provide support for implementing the change on an Army-wide scale.

We would have had to change little: The existing Team structure would have supported TQM techniques (as a Natural Working Group) and many of the problem solving tools we used are used in TQM problem solving procedures. I am convinced that "just in time training" would have helped us better map out our proposed changes and procedures, without taking any

longer than our floundering around did. (21: 12) The end result of this training would have been a much greater long term impact on the Bronco Team--we could have used our TQM processes on other PATs as they became needed.

How much would using metrics have helped? They would have helped, first, to more clearly identify what parts of the problems we could measure (and that were thus subject to improvement). Second, they would have helped to quantify the problem and to determine its scope and the relationship it had with other battlefield events. Third, metrics would have served to measure improvement. Finally, they would have provided the basis (statistics) for a stronger argument for Army-wide adoption of the solution by the coordinating center at Ft. Leavenworth. The data collected over several rotations (or years) would serve as an outstanding way to measure long-term effectiveness of Army brigade staff decision-making training. The NTC already measures different resources used, overall training effectiveness, and a variety of other activities for each training brigade: Typically, these measurements are displayed during command, staff and informational briefings using various Pareto charts. Including a few more measurements and charts could have been very cost effective.

X. Conclusions.

The Chief of Staff of the Army has paraphrased a famous quality slogan, saying: "Moving our Army into the next century is a journey, not a destination; we know where we are going and we are moving out." (17: rear interleaf) This case study examined the Bronco team's decision-making process at the start of that journey.

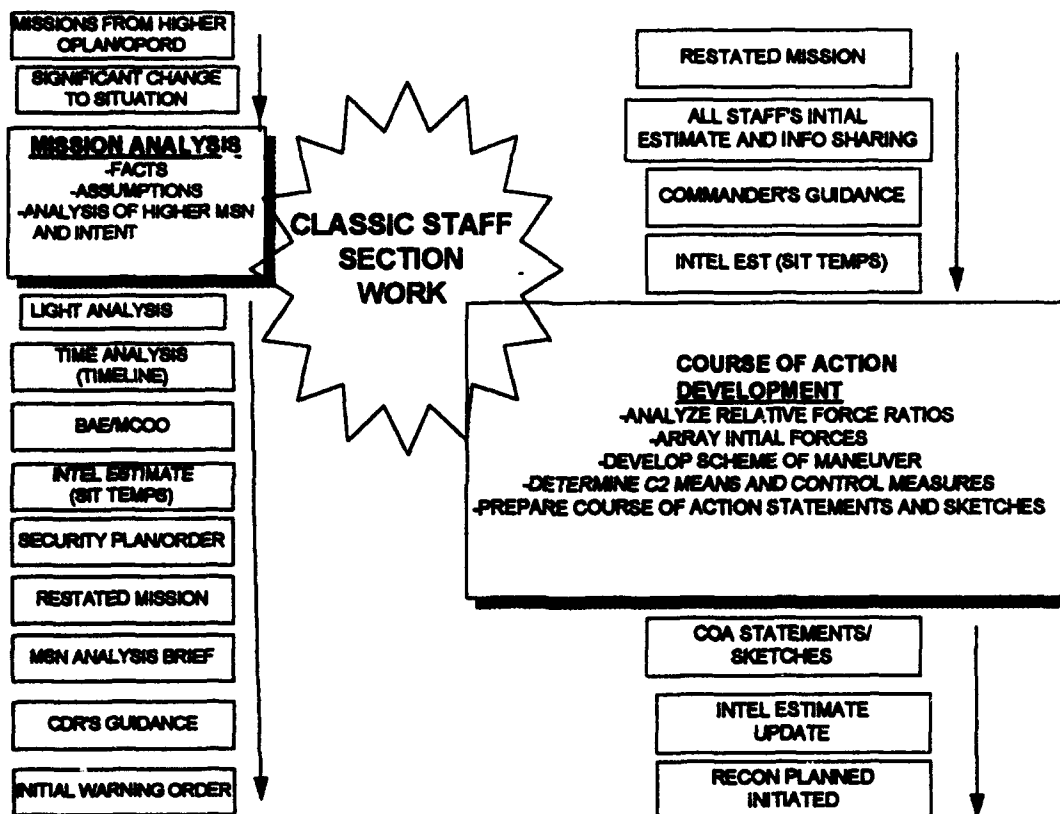
The Bronco team addressed the problem of brigade tactical decision-making during operations using the Military Decision-Making Procedure. Total Quality Management offers other decision-making models, most of which are based on the Shewart Plan-Do-Study-Act (PDSA) cycle. The key advantage in using one of the TQM models, is that instead of relying on the Staff or Command Estimate, these TQM models rely instead on "quality tools" to more clearly identify the problem, to define and measure progress, and to assist in developing solutions. Also, some of these tools are more appropriate in certain circumstances than are others; TQM publications such as *Air Force Process Improvement Guide* and *The Memory Jogger* clearly

describe each of the tools, when they are most applicable, and how to use them. While the Broncos were searching for answers, we were also searching for the right questions to ask--A good TQM/TAQ reference book would have been an outstanding addition to our library at that time.

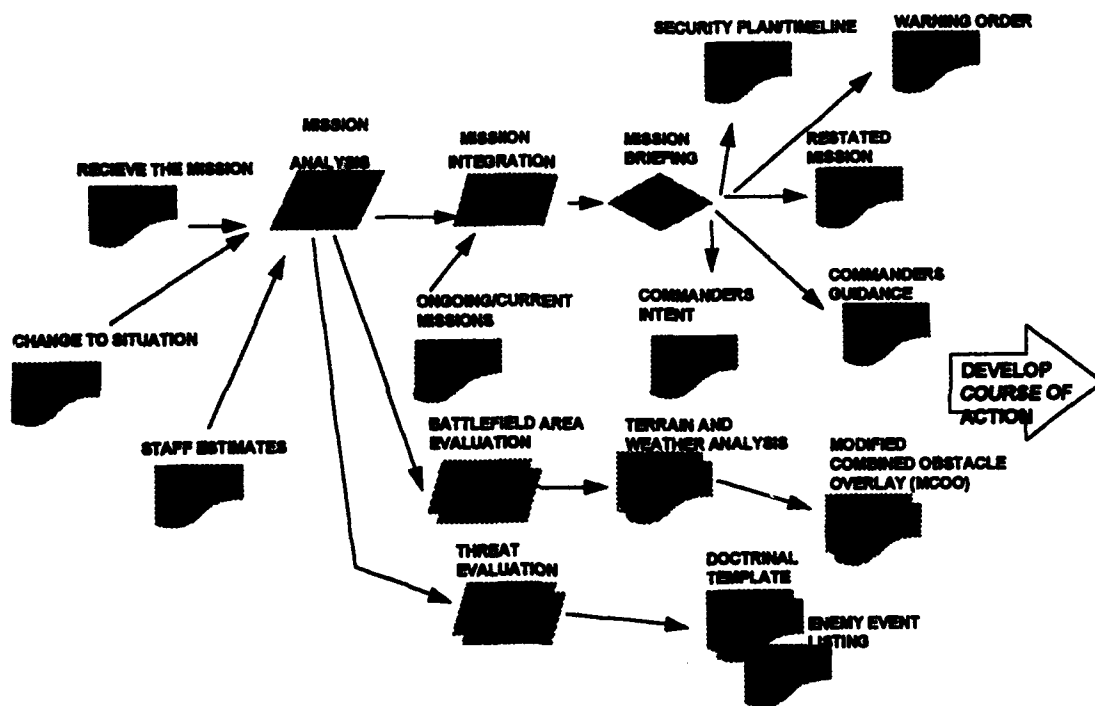
In this case study, the Bronco Team established the equivalents of both Process Action Teams and a Quality Management Board--although we didn't recognize our sub teams by those names. Had we approached the problem with the TAQ/TQM structure and purposes in mind, our processes and sub-team responsibilities would have been more clearly mapped out. As it was, we found ourselves suffering from much the same disease we were trying to cure--false starts, partial solutions and wasted efforts. The Bronco Skit, affinity diagram, and briefings were only partial solutions. The final products--the flowchart, and instructional film--only partially accomplished the mission assigned by the commanding general. The continuing discussions with the Army Schools and Centers clearly indicate the need to reenter the PDSA cycle.

Some types of problems will rarely have adequate time to use TQM/TAQ tools to search for solutions, or the requirement for the best reasonably available solution will far outweigh inefficient processes (e.g., tactical decision-making during operations). These types of problems are well served by the Military Decision-Making Process. On the other hand, there are many other types of problems, such as that examined in this case study (searching for needed doctrinal or training concept changes), that allow adequate time to apply TQM concepts to focus on improving the process. Clearly, then, there are military applications for both the traditional Military Decision-Making Process and Total Quality Management processes: In this particular case, the Bronco Team used the wrong one.

APPENDIX A: STAFF ACTIONS CHART (page 1 only)



ANNEX B: STAFF ACTION FLOW CHART (page 1 only)



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